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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,173	04/09/2004	Masachika Masuda	DAIN:768	8404
25944	7590	05/22/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER KIM, SU C	
			ART UNIT 2823	PAPER NUMBER
			MAIL DATE 05/22/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,173

Applicant(s)

MASUDA ET AL.

Examiner

Su C. Kim

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) 5-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

HSIEN-MING LEE
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee et al. (US 6876066) in view of Chun-Jen et al. (US 6337510) and further in view of Yagi et al. (US 6201292).

Pertaining claims 1, Fee discloses a plurality of terminal members each having an outer terminal (Fig. 10B, 134a) having an upper surface (Fig. 10B, top surface of 134a), a lower surface (Fig. 10B, bottom surface of 134a) and an outer side surface (Fig. 10B, side surface of 134a), an inner terminal (Fig. 10B, an area of 132a) having a contact surface (Fig. 10B, 132a), and a connecting part (Fig. 10B, 130a) connecting the outer and the inner terminal; a semiconductor device (Fig. 10B, 160) provided with terminal pads (Fig. 10B, 107) connected to the contact surfaces of the inner terminals (Fig. 10B, 132a) with bond wires (Fig. 10B, 175); and a resin molding sealing the terminal members (Fig. 10B, 180), the semiconductor device (Fig. 10B, 160) and the bond wires (Fig. 10B, 175) therein; the contact (Fig. 10B, 132a) surfaces of the inner terminals (Fig. 10B, an area of 132a), the upper surfaces 134a (Fig. 10B) of the outer terminals, the lower surfaces of the outer terminals (note: opposited side of element 134a) of the terminal members are included in planes (Fig. 10B, lead frame is in plane

shape), respectively, and the upper, the lower and the outer side surfaces of the outer terminals of the terminal members, and a surface of the semiconductor device opposite the surface provided with the terminal pads are exposed outside(Fig. 10B, the surface of 160 is exposed outside of resin180), and the inner terminals, the bond wires, the semiconductor device and the resin molding are included in the thickness of the outer terminals(Fig. 10B).

However, Fee fails to disclose that the inner terminals of the terminal members are thinner than the outer terminals and have the contact surfaces.

Also Fee fails to teach the semiconductor device has a thickness thinner than that of the inner terminal, and each inner terminal is so constructed that the section of the inner terminal is tapered toward the inside.

Chen-Jen discloses the inner terminals of the terminal members (Fig. 4, 222) are thinner than the outer terminals (Fig. 4, 220) and have the contact surfaces (Fig.4, 222).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Fee reference with the inner terminals of the terminal members are thinner than the outer terminals and have the contact surfaces taught by Chen-Jin in order to increase stability of die by molding resin 240 (Column 3, lines 49-52).

Fee and Chen-Jun in combination fail to teach the semiconductor device has a thickness thinner than that of the inner terminal, and each inner terminal is so constructed that the section of the inner terminal is tapered toward the inside.

Yagi discloses the semiconductor device 16 has a thickness thinner than that of the inner terminal 27 (Fig. 7), and each inner terminal is so constructed that the section of the inner terminal is tapered toward the inside 22A (Fig. 7)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention was made to provide Fee and Chen-Jun in combination reference with the semiconductor device has a thickness thinner than that of the inner terminal, and each inner terminal is so constructed that the section of the inner terminal is tapered toward the inside as taught by Yagi in order to reduce the size of device.

Regarding claim 2, as applied to claim 1 above, Fee, Chen-Jin, and Yagi in combination disclose all the limitations including, the outer terminal of each terminal member has cur part on the outer side surface (Chen-Jin, 225 or Fee, 186)

Regarding claim 3, as applied to claim 1 above, Fee, Chen-Jin, and Yagi in combination disclose all the limitations including, each terminal is formed or Cu, a Cu-base alloy or a Fe-Ni alloy containing 42% Ni (Chen-Jin, column 3, line 1)

Regarding claim 4, as applied to claim 1 above, Fee, Chen-Jin, and Yagi in combination disclose all the limitations including, coating at least portion of lead frame selected from a solder, gold, silver, palladium and tin layer (Fee, column 5, lines 1-4, plated at least a portion of the lead frame with gold silver, palladium).

Election/Restrictions

Claims 5-34 are withdrawn from consideration as subject to a combined Restriction and Election of Species Requirement on 9/29/2006. The examiner

explained the reasons as set forth in the previous office action and made final in response to the Restriction requirement mailed on 12/12/2006.

The examiner is not obligated to search and examine to the non-elected species due to the reasons stated in response to the Restriction requirement argument. Non-elected species are withdrawn from consideration and rejoined of non-elected process claims will not be required as elected species are not allowable.

Response to Arguments

The objection to the specification for use of the acronym "LSI" has been withdrawn by response of objection to specification on page 11, paragraph II, mailed on 3/12/2007 and now, the examiner considers "LSI" as "Large scale integrated circuit".

Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Su C. Kim whose telephone number is (571) 272-5972. The examiner can normally be reached on Monday - Thursday, 9:00AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Su C. Kim (5/18/2007)

HSIEN-MING LEE
PRIMARY EXAMINER

5/18/07